Picus® & Picus® NxT Electronic Pipette

User Manual

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1. Introduction

The Sartorius Picus®/Picus® NxT electronic pipette, of the Biohit*family*, brings ergonomics into a completely new level with its exceptionally lightweight and compact design, and its ease of operation. This pipette, operating with the air displacement principle, has been designed by an experienced R&D team, in co-operation with laboratory personnel and ergonomists, to create instruments for safe and comfortable pipetting with versatile functionality.

The Picus®/Picus® NxT is available in single and multichannel models (8 and 12-channel). Tip attachment and ejection is made safe and comfortable with the Optiload tip-loading feature together with the electronic tip ejection function. To improve safety by reducing the risk of contamination, replaceable Safe-Cone Filters can be used in all Picus®/Picus® NxT models greater than 10 µl.

The fully electronic operation, the unique DC-motor, electronic brake and piston control system, guarantee excellent accuracy and precision. The light and easy-to-use adjustment wheel, on top of the pipette, enables fast selection of the desired volume.

Picus® NxT follows in the footsteps of the design-awarded Picus®, which won the German Design Award Special Mention 2014, the reddot design award 2012 and the Fennia Price Honorary Mention 2012. These awards strongly reflect the user-friendly and high-quality design of the pipette.

Congratulations on becoming a new Picus®/Picus® NxT owner!

Ergonomic Design Sartorius

German Design Award
SPECIAL MENTION 2014

reddot design award
winner 2012

fenniaprize 12
good design grows global
HONORARY MENTION

1.1 Intended Use

The Picus®/Picus® NxT pipette is intended to be used in liquid handling applications for dispensing liquids in the volume range of 0,2 µl to 10 ml. It is recommended to use Optifit Tips or SafetySpace Filter Tips to ensure the best compatibility and performance with Sartorius pipettes.

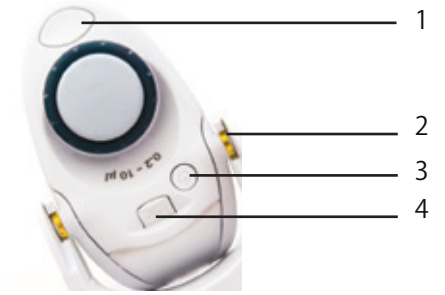
This liquid handling device is designed and manufactured to be used as general purpose laboratory equipment. This manual contains useful information e.g. for good pipetting practice.

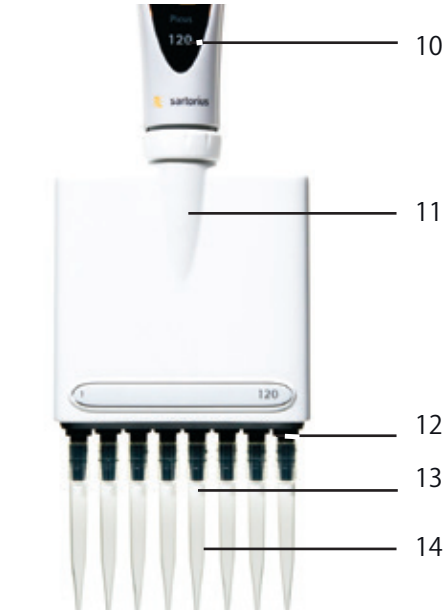
1.2 Product Overview

Before using the Sartorius Picus®/Picus® NxT electronic pipette for the first time, please review this operating manual carefully. This manual can be downloaded from Sartorius website www.sartorius.com. A paper print-out may be ordered by e-mail from Ihinfo.finland@sartorius.com.

1.2.1 Single and Multichannel pipettes

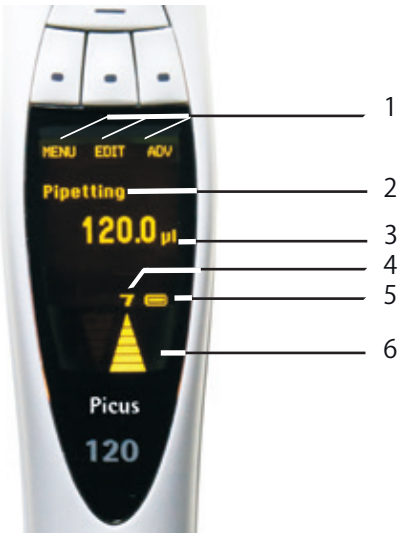
1. Electronic tip ejector
2. Charging contacts
3. ON/OFF button
4. USB-charging port
5. Operating button & volume range colour-code
6. Adjustment wheel
7. Hotkey for memory places
8. Softkeys for programming
9. Dot-matrix display
10. Maximum volume
11. Dispensing head (tip ejector collar and tip-cone), autoclavable (excl. 8/12-ch 1200 µl)
12. Optiload, spring-loaded tip-cones in multichannel pipettes
13. Safe-Cone Filters (excl. <10 µl pipettes)
14. Pipette tip





1.2.2 Display

The multi-colour backlit dot-matrix display is clear and the structure is informative.



1. Softkey functions
2. Current mode
3. Pipetting volume and aliquots in multidispensing modes
4. Speed
5. Battery charging indicator
6. Arrows indicating aspiration and dispensing

1.2.3 Softkey Functions

– Left Softkey (MENU, BACK, QUIT)
– Middle Softkey (EDIT, NEXT, SAVE, uppercase characters/lowercase characters/digits/symbols)
– Right Softkey (ADV, OK, CLEAR)

1.2.4 Optifit Tips and SafetySpace Filter Tips

It is recommended that Sartorius Optifit Tips or SafetySpace Filter Tips are used with Sartorius pipettes. This ensures the best possible compatibility and thus best possible accuracy and precision, as these tips are designed for the pipette in question.

Additional pipetting instructions to achieve good results are as follows

– The liquid and the pipette/tip combination should be approximately at the same temperature
– Choose the right tip volume for your pipette: the colour of the tip tray should match the colour code on the pipette
– Use Optifit Tips in rack, refill or bulk packaging and choose the purity level your application requires: free of DNase, RNase and endotoxin, and/or pre-sterilized
– In case you need to be aware of aerosol contamination, you may choose between Safe-Cone Filters, which are attached to the tip-cone and should be changed daily, or SafetySpace Filter Tips, which are discarded after each pipetting
– Choose SafetySpace Filter Tips also when you want to avoid loss of sample due to the sample reaching the filter. The extra space between the sample and the filter ensures that any sample, neither foaming nor viscous liquids, reach the filter when in the reverse pipetting or repetitive/multiple dispensing mode of the electronic pipette
– Pre-rinse the tip 3-5 times before pipetting (especially important in forward pipetting mode)
– After dispensing, wipe the tip against the receiving vessel's wall to catch the last droplet
– Change the tip after every pipetting

1.3 Content of Delivery Package

Picus®/Picus® NxT is delivered ready for use in a package containing:
- Picus®/Picus® NxT electronic pipette
- USB-charger
- Sartorius tip rack (10x96 tips) with up to 1000 µl single-channel models/ 1200 µl multichannel models
- One tip with 5 ml and 10 ml single-channel models
- Safe-Cone Filters and tweezers with models >10 µl
- Autoclavable grease with single-channel models
- QC-certificate (Picus®), certificate of accredited 3-point calibration (Picus® NxT)
- Quick Start Guide
- Tip information card

If any item in this delivery package is missing or damaged, please contact your local Sartorius representative.

2. Getting Started

Please read this manual before using Picus®/Picus® NxT electronic pipette.

1. Picus®/Picus® NxT is delivered ready for use.
2. Insert a replaceable Safe-Cone Filter into the tip-cone before use, to prevent contamination of the pipette.
3. Charge the pipette before first use for one (1) hour.
4. Press the ON/OFF button on the top of the pipette to turn the power on.
5. Press tip ejector button when advised by the display.
6. The pipette is now ready to be programmed and operated.

2.1 Charging

It is recommended that you charge the pipette before first use for one (1) hour. Place the pipette onto the charging stand or connect to the USB charger. Make sure that the charging stand is connected to the power outlet and that the charging contacts of the pipette are properly in contact with the charging grooves of the charging stand.

- Charging with USB-charger:
  Connect the USB-cable to the pipette and plug the charger into the mains power.
- Charging in Charging Stand or Carousel:
  Make sure that the charging stand is connected via the AC-charger to the mains power outlet, and that the charging contacts of the pipette are inserted in the charging grooves of the charging stand, making proper contact.

Charging options for Sartorius electronic pipettes:

- USB-charger, universal, included in the package.
- Sartorius Charging Stand for one pipette, order code: 730981
- Sartorius Charging Carousel for 4 pipettes, order code: 730991

The battery sign in the bottom right corner of the display indicates the battery's level of charge. When the battery's level of charge is low, the indicator blinks LOW and the pipette needs to be recharged.

NOTE! Before connecting the AC-charger to the charging stand and the mains electrical outlet, make sure that power supply output voltage level and power capacity is correct. Use of incorrect power supplies may damage the device. Only use the power supplies recommended by the manufacturer.

2.2 Power Up

1. Press ON/OFF button: Pipette will turn on.
2. Press tip ejector button as advised on the display. The pipette is now ready to be programmed and operated.
3. While used and/or charged pipette is in active mode, all the processor functions are activated and the display backlight is on.
4. 1 minute after last activity: The pipette will turn to a power saving mode and the backlight is dimmed. The pipette returns to active mode, when any of its buttons are pressed or the adjustment wheel is turned.
5. 10 minutes after last activity: The backlight is turned off, but the display is still visible. The pipette returns to active mode, when any of its buttons are pressed or the adjustment wheel is turned.
6. 60 minutes after last activity: The pipette turns OFF. To power up the pipette again, press operating button or ON/OFF button. The pipette will turn on also when charged.

If the pipette is turned off by pressing ON/OFF button, it can be turned on only by pressing the same button.

3. Operation

3.1 Principles of Operation

Pipetting functions are controlled using the operating button, adjustment wheel and Softkeys. The Hotkey is for storing or activating a program.

Operating button
- Used to confirm the settings (alternative to the Softkey for OK) and initiate the piston movement for aspiration, dispensing and repeated blow-out.

Adjustment wheel - for fast volume setting
- Used for scrolling the menu and for volume settings.
- Moves the piston in manual and titrating modes for aspiration and dispensing.
- Unlocks the edit menu: turn the adjustment wheel to the end to unlock the pipette for editing in active mode.

Electronic tip ejector
- Ejects the tip(s) with a light touch

Left Softkey
- MENU: Displays the main mode selection.
- BACK: Exits the MENU, EDIT or ADV functions, or the current display, without saving the latest change/setting.
- QUIT: Quits the pipetting task

Middle Softkey
- EDIT: Activates the editing mode in order to change parameters.
- NEXT: Active in editing mode. Confirms the parameter setting and moves to the next parameter to be edited.
- SAVE: Active in memory settings. Saves the selected program to the memory location.
- Alphabets/symbols: Active in memory settings and in setup settings for entering letters, numbers or symbols

Right Softkey
- ADV: Displays the additional modes for the activated main mode.
- OK: Confirms the setting/selection and exits the MENU, EDIT or ADV functions, or the current display.
- CLEAR: Deletes the characters from User ID or the names given to the memory locations.

Hotkey

All models include 10 memory places for the favourite and most used pipetting settings.

3.2 Pipetting Modes

The Picus® /Picus® NxT electronic pipette has eight (8) main pipetting modes. The Picus® NxT has seven (7) additional modes while the Picus® has six (6) additional modes.

Pipetting Modes - available in all Picus® & Picus® NxT models		**Additional Modes (ADV)** - to be used in conjunction with the pipetting mode						
		Tracker	Mixing	Counter	Excess Volume Adjustment	Auto Dispensing	Repeated Blow-out*	Fast Dispensing
Pipetting	✓	✓	✓	✓			✓	
Reverse Pipetting	✓	✓		✓	✓			
Multi Dispensing	✓	✓			✓	✓		
Manual Pipetting	✓						✓	
Diluting	✓		✓				✓	
Sequential Dispensing	✓				✓			
Multi Aspiration	✓						✓	
Titration	✓							✓

*Repeted Blow-out only in Picus® NxT

3.2.1 Pipetting (Forward Pipetting)

Pipetting mode aspirates and then dispenses the selected volume of liquid. Recommended for aqueous liquids, liquids containing small amounts of detergent or proteins, and solvents.

To select Pipetting mode:
1. Select MENU by pressing the left Softkey
2. Confirm Pipetting mode by pressing the operating button or the right Softkey for OK. Once Pipetting is selected, the latest settings used will be displayed.

To edit the parameters (volume, speed):
1. Press the middle Softkey for EDIT or turn the adjustment wheel all the way to the right. The first parameter to be edited is now highlighted.
2. Turn the adjustment wheel to set the desired value.
3. Confirm the setting by pressing
   a. the operating button or the right Softkey for OK, and simultaneously exit the editing mode
   OR
   b. the middle Softkey for NEXT, and you move on to edit the next highlighted parameter.
4. Repeat steps 2 & 3 for all the parameters you wish to edit.
5. To exit the editing mode during programming press the left Softkey for BACK, and the latest changes are not saved.

To execute the selected program:
1. Press the operating button to aspirate the liquid in.
2. Press the operating button again to dispense the liquid.
3. Eject the tip by pressing the electronic tip ejector button.

Additional modes
Counter, Mixing and Tracker can be used in conjunction with the Pipetting mode. Additionally, in Picus® NxT, Repeated Blow-out is available for use with the Pipetting mode. Repeated Blow-out helps to remove the residual liquid from the tip, if the liquid is such that normal dispensing does not completely empty the tip.
- Counter counts the number of dispensings. Counting can be selected to start in any desired number.
- Mixing mixes the liquids manually or automatically. The mixing volume can be adjusted according to the pipette's maximum volume.
- Tracker advises user in microplate dispensing by displaying the location for the next dispensing.

For more information on using additional modes see chapter 3.2.9.

NOTE! Only one additional mode can be selected at a time. Repeated Blow-out can be combined with other additional modes.

Press the Softkey for MENU

Choose the mode

Press the Softkey for EDIT

Change settings and press OK or NEXT

3.2.2 Reverse Pipetting

Reverse Pipetting aspirates the selected volume as well as an excess volume. Recommended for biological, foaming and viscous liquids. In Reverse Pipetting mode the excess is left inside the tip and is then discarded.

To Select Reverse Pipetting mode
1. Select MENU by pressing the left Softkey.
2. Use the adjustment wheel to select Reverse. Confirm the setting by pressing the operating button or the Softkey for OK. Once Reverse Pipetting mode is selected, the latest settings used will be displayed.

To edit the parameters (volume, speed):
1. Press the middle Softkey for EDIT or turn the adjustment wheel all the way to the right. The first parameter to be edited is now highlighted.

2. Turn the adjustment wheel to set the desired value.
3. Confirm the setting by pressing
   a. the operating button or the right Softkey for OK, and simultaneously exit the editing mode
   OR
   b. the middle Softkey for NEXT, and move on to edit the next, highlighted, parameter.
4. Repeat steps 2 & 3 for all parameters you wish to edit.
5. To exit the editing mode during programming press the left Softkey for BACK. The latest changes are not saved.

To execute the selected program:
1. Press the operating button to aspirate the liquid (selected volume + excess) in.
2. Press the operating button again to dispense the selected volume.
3. To continue reverse pipetting without discarding the excess volume, either
   a. hold the operating button down and then release it for reaspiration,
   OR
   b. press the left Softkey for NO and start from the beginning.
4. To discard the excess volume and to empty the tip, press the operating button twice.
5. Eject the tip by pressing the electronic tip ejector button.

Additional Modes
Counter, Excess Adjustment and Tracker can be used in conjunction with Reverse Pipetting.
- Counter counts the number of dispensings. Counting can be selected to start at any wanted number.
- Excess adjustment can be used to set the excess volume. When activated the excess volume is set to default.
- Tracker advises the user in microplate dispensing by displaying the location for the next dispensing.

For more information on using additional modes see chapter 3.2.9.

NOTE! Only one additional mode can be selected at a time.

3.2.3 Multi-Dispensing

Multi-Dispensing aspirates the total volume as well as an excess volume, then repetitively dispenses equal volumes of liquid. Recommended in long pipetting series and microplate dispensing.

To select Multi-Dispensing mode:
1. Select MENU by pressing the left Softkey.
2. Use the adjustment wheel to select Multi Disp. Confirm the setting by pressing the operating button or the Softkey for OK. When Multi-Dispensing mode is selected, the latest settings used will be displayed.

To edit the parameters (volume, number of dispensings, speed):
1. Press the middle Softkey for EDIT or turn the adjustment wheel all the way to the right. The first parameter to be edited is now highlighted.
2. Turn the adjustment wheel to set the desired value.
3. Confirm the setting by pressing
   a. the operating button or the right Softkey for OK, when you simultaneously exit the editing mode
   OR
   b. the middle Softkey for NEXT, when you can move on to edit the next, highlighted, parameter.
4. Repeat steps 2 & 3 for all parameters you wish to edit.
5. To exit the editing mode during programming press the left Softkey for BACK. The latest changes are not saved.

To execute the selected program:
1. Press the operating button to aspirate the liquid (selected volume + excess) in.
2. Press the operating button again to discard the prime excess.
3. Press the operating button repeatedly untill all aliquots have been dispensed.
4. To continue repetitive dispensing without discarding the excess volume, either
   a. hold the operating button down and then release it for reaspiration,
   OR
   b. press the left Softkey for NO and start from the beginning.
5. To discard the excess volume and to empty the tip, press the operating button.
6. Eject the tip by pressing the electronic tip ejector button.

Additional modes
Excess Adjustment, timed Automated Dispensing and Tracker can be used in conjunction with Multi-Dispensing. Excess Adjustment can be used to set the excess volume. Timed Automated Dispensing dispenses the liquid automatically without the need to press the operating button. Tracker advises the user in microplate Dispensing by displaying the location for the next dispensing.

For more information on using additional modes see chapter 3.2.9.

NOTE! Only one additional mode can be selected at a time.

3.2.4 Manual Pipetting

In Manual Pipetting the piston movement in aspiration and dispensing is controlled manually turning the adjustment wheel. It is ideal for measuring reagents, and in applications in which the pipetting speed needs to be controlled manually.

To select Manual Pipetting mode:
1. Select MENU by pressing the left Softkey.
2. Use the adjustment wheel to select Manual. Confirm the setting by pressing the operating button or the Softkey for OK.

To edit the parameters (volume, speed):
1. Press the middle Softkey for EDIT or turn the adjustment wheel all the way to the right. The first parameter to be edited is now highlighted.
2. Turn the adjustment wheel to set the desired value.
3. Confirm the setting by pressing
   a. the operating button or the right Softkey for OK, and simultaneously exit the editing mode
   OR
   b. the middle Softkey for NEXT, and move on to edit the next, highlighted, parameter.
4. Repeat steps 2 & 3 for all parameters you wish to edit.
5. To exit the editing mode during programming press the left Softkey for BACK, and the latest changes are not saved.

To execute the selected program:
1. Press the operating button to activate the aspiration of the liquid.
2. Press the operating button again and hold it down, or turn the adjustment wheel to the right, to aspirate the liquid. You may influence the aspiration speed by how far right you turn the adjustment wheel. You may pause the aspiration by releasing the operating button or the adjustment wheel for a while.
3. To activate the dispensing of the liquid, turn the adjustment wheel to left. Keep the adjustment wheel to left, or hold the operating button down as long as you want to continue dispensing.

4. When the entire volume is dispensed, press the operating button to empty the tip OR select NO (left Softkey) to continue directly with aspiration.
5. Eject the tip by pressing the electronic tip ejector button

Additional modes
Repeated Blow-out, available with Picus® NxT, can be used in conjunction with Manual Pipetting mode, if the liquid is such that normal dispensing does not completely empty the tip.

For more information on using additional modes see chapter 3.2.9.

3.2.5 Diluting

In Dilution mode liquids separated by an air gap are aspirated and then dispensed simultaneously. Diluting can be used for diluting samples and reagents. Aspirate first the diluent followed by an air gap, and finally aspirate the sample or reagent to avoid contamination of the diluent.

To select Diluting mode:
1. Select MENU by pressing the left Softkey.
2. Use the adjustment wheel to select Diluting. Confirm the setting by - pressing the operating button or the Softkey for OK.

To edit the parameters (volumes, speed):
1. Press the middle Softkey for EDIT or turn the adjustment wheel all the way to the right. The first parameter to be edited is now highlighted.
2. Turn the adjustment wheel to set the desired value.
3. Confirm the setting by pressing
   a. the operating button or the right Softkey for OK, and simultaneously exit the editing mode
   OR
   b. the middle Softkey for NEXT, and move on to edit the next, highlighted, parameter.
4. Repeat steps 2 & 3 for all parameters you wish to edit.
5. To exit the editing mode during programming press the left Softkey for BACK., and the latest changes are not saved.

To execute the selected program:
1. Press the operating button to aspirate the dilutor.
2. Press the operating button again to aspirate the air gap.
3. Press the operating button the third time to aspirate the sample.
4. Dispense the entire volume by pressing the operating button.
5. Empty the tip by pressing the operating button.
6. Eject the tip by pressing the electronic tip ejector button.

Additional modes:
Mixing, and repeated Blow-out with Picus® NxT, can be used in conjunction with Diluting. Mixing mixes the liquids manually or automatically. The mixing volume can be adjusted according to the pipette's maximum volume. Repeated Blow-out helps to remove the residual liquid from the tip, if the liquid is such that normal dispensing does not completely empty the tip.

For more information on using additional modes see chapter 3.2.9.

3.2.6 Sequential Dispensing

Sequential Dispensing dispenses repetitively selected volumes in any desired order. This is a useful mode, for example, for diluting series and making calibration curves.

To select Sequential Dispensing mode:
1. Select MENU by pressing the left Softkey.
2. Use the adjustment wheel to select Seq. Disp. Confirm the setting by pressing the operating button or the Softkey for OK. The latest settings used will be shown.

To edit the parameters (number of aliquots, aliquot volumes, speed):
1. Press the middle Softkey for EDIT or turn the adjustment wheel all the way to the right. The first parameter to be edited is now highlighted.
2. Turn the adjustment wheel to set the desired value.
3. Confirm the setting by pressing
   a. the operating button or the right Softkey for OK, and simultaneously exit the editing mode

   OR

   b. the middle Softkey for NEXT, and move on to edit the next, highlighted, parameter.
4. Repeat steps 2 & 3 for all parameters you wish to edit.
5. To exit the editing mode during programming press the left Softkey for BACK, and the latest changes are not saved.

To execute the selected program:
1. Press the operating button to aspirate the selected volume.
2. Press the operating button again for pre-out to make sure that the first aliquot will be of correct volume.
3. Dispense the set aliquots by pressing the operating button for each aliquot.
4. After the last aliquot has been dispensed, press the operating button to empty the tip or press NO to start aspirating without emtying the remaining liquid.
5. Eject the tip by pressing the electronic tip ejector button.

Additional modes
Excess Adjustment, and Repeated Blow-out with Picus® NxT, can be used in conjunction with Sequential Dispensing. Excess Adjustment can be used to set the excess volume. Repeated Blow-out helps to remove the residual liquid from the tip, if the liquid is such that the normal dispensing does not completely empty the tip.
For more information on using additional modes see chapter 3.2.9.

3.2.7 Multi-Aspirating

Multi-Aspiration aspirates a selected volume a set number of times. Multi-Aspirating is a useful mode, for example, for sample pooling and microplate washing. Select the volume and the number of aspirations desired. Repeat the aspiration until the series is completed, then discard the full aspirated volume in a single step.

To select Multi-Aspiration mode:
1. Select MENU by pressing the left Softkey.
2. Use the adjustment wheel to select Multi-Aspiration mode. Confirm the setting by pressing the operating button or the Softkey for OK. When Multi-Aspiration mode is selected, the latest settings used will be displayed.

To edit the parameters (volumes, number of aspirations, speed):
1. Press the middle Softkey for EDIT or turn the adjustment wheel all the way to the right. The first parameter to be edited is now highlighted.

2. Turn the adjustment wheel to set the desired value.
3. Confirm the setting by pressing
   a. the operating button or the right Softkey for OK, and simultaneously exit the editing mode
   OR
   b. the middle Softkey for NEXT, and move on to edit the next, highlighted, parameter.
4. Repeat steps 2 & 3 for all parameters you wish to edit.
5. To exit the editing mode during programming press the left Softkey for BACK, and the latest changes are not saved.

To execute the selected program:
1. Press the operating button repeatedly until all the set volumes are aspirated.
2. To dispense the liquid and empty the tip, press the operating button again.
3. Eject the tip by pressing the electronic tip ejector button.

Additional mode
Repeated Blow-out, available with Picus® NxT, can be used in conjunction with Multi-Aspiration mode, if the liquid is such that the normal dispensing does not completely empty the tip.

For more information on using additional modes see chapter 3.2.9.

3.2.8 Titration

In Titration mode, the full volume is aspirated after which dispensing speed is manually controlled. The display shows the dispensed volume in real time during dispensing. Titration is used to determine the unknown concentration of an identified analyte.

To select Titration mode:
1. Select MENU by pressing the left Softkey.
2. Use the adjustment wheel to select Titration. Confirm the setting by pressing the operating button or the Softkey for OK. The Titration mode is activated with the latest settings.

To edit the parameters (volume, speed, volume for Fast Dispensing, in case it is enabled):
1. Press the middle Softkey for EDIT or turn the adjustment wheel all the way to the left or right. The first parameter to be edited is now highlighted.
2. Turn the adjustment wheel to set the desired value.
3. Confirm the setting by pressing
   a. the operating button or the right Softkey for OK, and simultaneously exit the editing mode
   OR
   b. the middle Softkey for NEXT, and move on to edit the next, highlighted, parameter.
4. Repeat steps 2 & 3 for all parameters you wish to edit.
5. To exit the editing mode during programming, press the left Softkey for BACK, and the latest changes are not saved.

To execute the selected program:
1. Press the operating button to aspirate the set volume.
2. Press again the operating button, and hold it down, or turn the adjustment wheel to the left to dispense the liquid. You may influence the dispensing speed by how far left you turn the adjustment wheel. You may pause the dispensing by releasing the operating button or the adjustment wheel for a while.
3. To finish titrating, empty the tip by pressing the operating button twice.
4. When the titration cycle is completed, eject the tip by pressing the electronic tip ejector button.

Additional modes
Fast Dispensing can be used with the Titration mode. Fast Dispensing dispenses the first volume automatically. After dispensing the first volume, dispensing is continued manually.

For more information on using additional modes see chapter 3.2.9.

3.2.9 Additional Modes

The additional modes can be optionally used in conjunction with the main pipetting modes as shown on the table on page 9 of this manual.

To activate (or deactivate) the additional modes, once you have already selected the main mode:

1. Choose ADV by pressing the right Softkey. All available additional modes are listed and their current status (On/Off) is displayed.
2. Scroll through the list of additional modes using the adjustment wheel.
3. Select the desired highlighted additional mode by pressing the right Softkey for OK or the operating button. The mode is changed On or Off.
4. If On is selected, continue with other parameter selections, where relevant for the additional mode in question, as instructed below, for each additional mode.

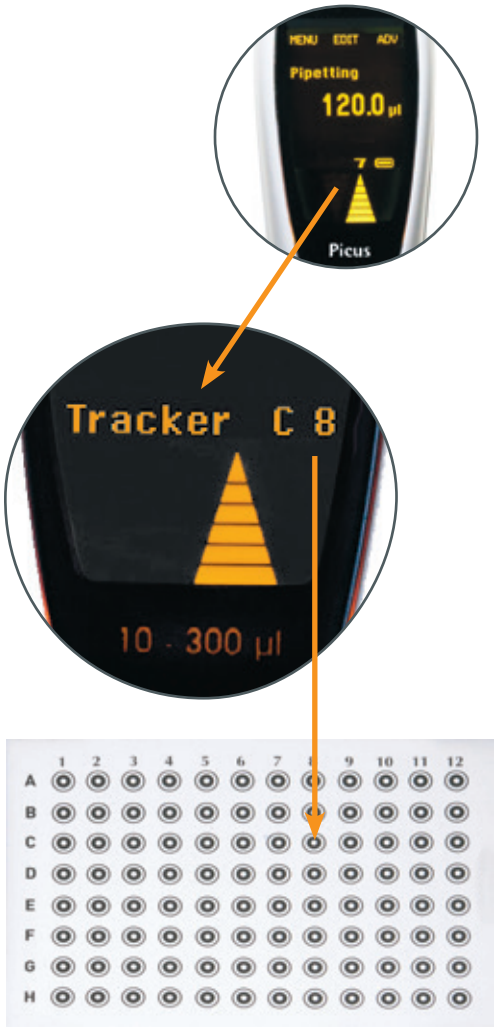
Tracker
Tracker is a helpful feature for guiding the user to dispense into correct microplate wells. It is a unique feature only available with Picus® and Picus® NxT pipettes and can be used with the following main modes: Pipetting, Reverse Pipetting and Multi-Dispensing.

Once Tracker is activated, continue choosing the related parameters for:
Single-channel pipettes:

1. Select the microplate size (96 or 384 well plate) and the pipetting direction (in rows or columns) by scrolling the adjustment wheel.
2. Then press the operating button or the right Softkey for OK to activate the Tracker.
3. The well, into which to pipette, is shown on the display:
4. If pipetting in rows: A1 - A2 - A3... B1 - B2 - B3... C1 - C2 - C3...is displayed.
5. If pipetting in columns: 1A - 1B - 1C... 2A - 2B - 2C... 3A - 3B - 3C... is displayed.
6. The first dispensing location can be selected as desired with the EDIT function of each main mode.

8-channel pipettes:

1. Select the microplate size (96 or 384 well plate). Pipetting is possible in columns only.
2. Press the operating button or the Softkey for OK to activate the Tracker.
3. The wells, into which to pipette, are shown on the display:
   For 96 well plate, columns 1, 2, 3...are shown.
   For 384 well plate, columns are showed as follows:
   1. pipetting: A1 – C1 – E1...
   2. pipetting: B1 – D1 – F1...
   3. pipetting: A2 – C2 – E2...
   4. pipetting: B2 – D2 – F2...
   and so on.
4. The first dispensing column can be selected as desired with the EDIT function of each main mode.



12-channel pipettes:

1. Select the microplate size (96 or 384 well plate). Pipetting is possible in rows only.
2. Press the operating button or the right Softkey for OK to activate the Tracker.
3. The wells, into which to pipette, are shown on the display:
   For 96 well plates, rows are shown as A, B, C....
   For 384 well plate, rows are shown as follows:
   1. pipetting: A1 – A3 - A5...
   2. pipetting: A2 – A4 – A6...
   3. pipetting: B1 – B3 - B5...
   4. pipetting: B2 – B4 – B6...

   and so on.
4. The first dispensing column can be selected as desired with the EDIT function of the main mode.

Counter

Counter counts the number of pipetting cycles up to 384 and can be used in conjunction with Pipetting and Reverse Pipetting modes. You may start counting from any desired number < 384. The starting number can be set with the adjustment wheel right after the additional mode has been activated, or with the EDIT function of the main mode.

Mixing

With the Mixing mode the pipette mixes the liquids either when the operating button is held down (manually) or automatically a given number of times. The Mixing mode can be used in conjunction with Pipetting and Diluting modes. The volume for mixing can be selected freely up to the maximum volume of the pipette.

To set the parameters (volume, manual/automatic):

1. Once you have selected the Mixing mode the display shows the volume used for mixing (80% of the volume to be dispensed).
2. Turn the adjustment wheel to set the desired volume for mixing.
3. Confirm the setting by pressing
   a. the operating button or the right Softkey for OK, and the pipette simultaneously exits the editing mode

   OR

   b. the middle Softkey for NEXT, when you can move on to select manual mixing or automatic mixing with the number of mixing cycles.
4. If you chose 3.b, then turn the adjustment wheel to select Manual or the number of automatic dispensings.
5. Confirm the setting by pressing the operating button or the right Softkey for OK, when you simultaneously exit the editing mode.

To activate/deactivate mixing:

1. Start the main mode in question per the instructions given earlier and once the display tells you to “Start mixing”
   a. press and hold down the operating button for the duration of manual mixing.

   OR

   b. press the operating button once to activate the automatic dispensing cycles.

   OR

   c. press the left Sofkey for NO, to exit Mixing.
2. You may pause the mixing by pressing the operating button during the mixing cycle. By pressing it again, mixing continues.
3. You may also exit mixing during the mixing cycle by pressing the left Softkey for QUIT.
4. Continue by emptying the tip.

Excess Adjustment
Excess Adjustment can be used to set the excess volume with Reverse Pipetting, Multi-Dispensing and Sequential Dispensing modes, where excess volume is used. The excess volume varies according to the volume range of the pipette.

To set the excess volume:
1. Turn the adjustment wheel to select the desired volume after the additional mode has been activated. You may also press the middle Softkey for DEFAULT to choose the default excess volume.
2. Confirm the selection by pressing the operating button or the right Softkey for OK.

Automated Dispensing
Automated Dispensing dispenses the aliquots automatically, in timed intervals, with Multi-Dispensing mode. The user does not need to press the operating button for each dispensing. The time period between dispensings can be set from 0,1 to 9,9 seconds.

To set the delay:
1. Turn the adjustment wheel to select the desired delay right after the additional mode has been activated.
2. Confirm the selection by pressing the operating button or the right Softkey for OK.

Fast Dispensing
Fast Dispensing can only be used in the Titration mode. In Fast Dispensing, the first selected portion of the total volume is dispensed automatically, and the remaining volume is dispensed manually.

To set the volume for Fast Dispensing:
1. Turn the adjustment wheel to select the desired volume right after the additional mode has been activated.
2. Confirm the selection by pressing the operating button or the right Softkey for OK.

Repeated Blow-out
Repeated Blowout allows the user to activate and repeat the blowout of the remaining liquid droplets, when dispensing liquids that easily leave a residue in the tip. Repeated Blowout is available with Pipetting, Manual Pipetting, Diluting and Multi-Aspiration modes.

To activate/deactivate Blowout:
1. Start the main mode in question per the instructions given earlier
2. Once the pipetting cycle has ended, you may start the blowout by pressing the operating button as many times as you see needed.
3. To exit Blowout, turn the adjustment wheel or eject the tip by pressing the tip ejector button.

To exit Blowout, turn the adjustment wheel or eject the tip by pressing the tip ejector button.

3.3 Saving Pipetting Programs to Memory

All Picus® and Picus® NxT models allow the saving of 10 programs into the memory of the pipette.

To store the program in the memory:

1. Choose the pipetting mode and set the parameters as guided in the previous chapter, then press the Hotkey (H) to see the list of memory locations.
2. Choose the desired memory location by turning the adjustment wheel (A).
3. Press the middle Softkey for SAVE (S).
4. The pipette asks for a password, if the password feature has been activated. Enter the password, one number at a time, by turning the adjustment wheel and confirming the number by pressing the operating button or the right Softkey for OK. Repeat for all numbers in your password.
5. Next the pipette asks for a name for the memory location. Activate the name editor by pressing the operating button (B).
6. With the middle Softkey (S) you can switch between characters, numbers and symbols. Turn the adjustment wheel (A) to change the characters and press the operating button (B) or the right Softkey (R) for OK to confirm the selection and to move to the next character. If you want to cancel the character change, you can press the left Softkey for BACK.
7. Repeat the sequence, in point 6, for all characters. Confirm the last character with OK or the operating button, and the pipette simultaneously exits the editing mode.
8. If you want to clear any of the characters in the name, turn the adjustment wheel until the character is underlined and press the right Softkey for CLEAR. Repeat this until the desired characters are cleared.
9. Save the program name by pressing the middle Softkey for SAVE (S), and the pipette returns to the list of memory locations.
10. At any time, if you wish to exit the current function and/or do not want to save the latest change, press the left Softkey for BACK.

To activate the program from a memory location:

1. Press the Hotkey (H) to see the list of memory locations.
2. Choose the desired memory location by turning the adjustment wheel (A).
3. Press the operating button (B) or the right Softkey for OK to activate the saved program.
4. The pipette is now ready for running the program. The memory location is displayed next to the main mode name.

M10 indicates that the shown pipetting program has been saved in memory place 10.

3.4 Setup

The user may change the settings of the pipette through the Setup menu. The modifiable settings are the accuracy adjustment, sound, backlight, user ID, GLP info, language, password and reset to factory settings.
The following chapters introduce the various settings and give instructions on how to modify them.

3.4.1 Adjustment

The length of the piston stroke in Picus® and Picus® NxT pipettes is defined by the manufacturer as a factory setting. This factory setting is to be used in normal circumstances: with aqueous liquids, at standard atmospheric pressure, and with the pipette, tip and the liquid at standard room temperature.

When these circumstances change, the accuracy of the dispensed volume may be affected. To maintain accuracy in altered circumstances, the user can adjust the factory setting per the changed environmental factors or type of liquid to be used, by using the Adjustment function.

Adjustment is needed circumstantially to correct the dispensed volumes in the following cases:

- when pipetting liquids with characterisitics that greatly differ from water (for example viscous or volatile liquids)
- when the temperature between the pipette, pipette tip and liquid differs greatly
- when the ambient air pressure differs from that of standard atmospheric pressure

NOTE! When the factory settings are replaced with adjusted settings, the performance specifications (random & systematic error) of the pipette, given by the manufacturer, are no longer applicable. However, when the factory settings are reactivated, the performance specifications will apply again.

The Adjustment function enables the user to adjust the pipette in 1, 2 or 3 calibration points. The more measurement points are selected, the better accuracy in results is reached over the whole volume range of the pipette. Single-point adjustment is recommended, when pipetting a constant volume within a range, and 2 or 3 point adjustment, if performance over the whole range is required.

The adjustment options are:

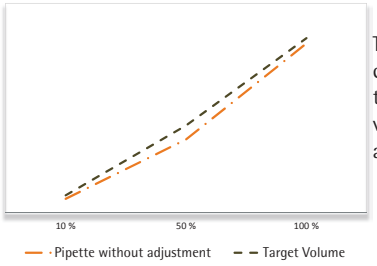
- 1-point adjustment: adjustment in one point only, the user can choose the desired adjustment point/volume
- 2-point adjustment: adjustment in 10 % and 100 % of the nominal volume
- 3-point adjustment: adjustment in 10 %, 50 % and 100 % of the nominal volume

When adjusting for accuracy, the actual volumes delivered should be measured in Pipetting mode. Once the adjustment is activated, it is in force for all pipetting modes of the pipette, and an ADJ symbol is displayed on the screen.

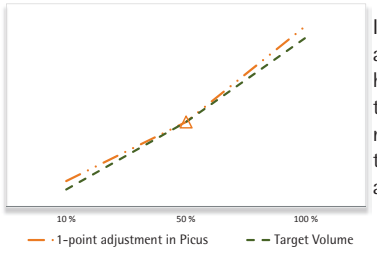
It is possible to store three (3) adjustments in the adjustment memory: ADJ1, ADJ2, ADJ3. These can be activated at any time for cases of specific use that require accuracy adjustments of the pipette.

To change the accuracy adjustment settings:

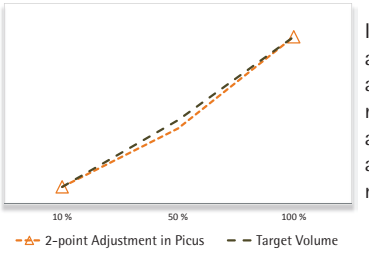
1. Select MENU by pressing the left Softkey.
2. Use the adjustment wheel to select Setup. Confirm the selection by pressing the operating button or the Softkey for OK.
3. Adjustment function is highlighted. Confirm the selection by pressing the operating button or the Softkey for OK.
4. Use the adjustment wheel to select ADJ1, ADJ2 or ADJ3 memory location. Edit the adjustment values by pressing the middle Softkey for EDIT.
5. Use the adjustment wheel to select 1 Point, 2 Points or 3 Points, per your need. Confirm the selection by pressing the operating button or the Softkey for OK.
6. If you chose 1-point adjustment, you next choose the desired target volume, for which you desire the result-accuracy to be adjusted, by turning the adjustment wheel. Confirm the volume selection by pressing the operating button or the Softkey for OK.
7. If you chose 2 or 3-point adjustment, the target volumes are already set. Just confirm them by pressing the operating button or the Softkey for OK.
8. Once you have set or accepted the target volume, the actual volume is required to be inserted. Now, you insert the actual, currently delivered volume, per your measurement result. Turn the adjustment wheel to choose the actual volume. Confirm the selection by pressing the operating button or the Softkey for OK. If the difference between the target volume and the actual value exceeds the limits that can be calibrated, then the display will show "Calibration values out of range".
9. Repeat steps 7 and 8 for 2 or 3-point adjustment, until all volumes are set.



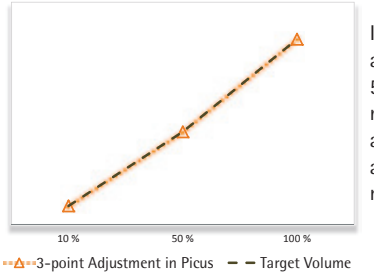
Theoretical comparison of target and actual values without adjustment



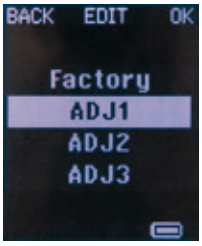
In this 1-point adjustment, it has been opted to use 50% of maximum volume to match actual and target results

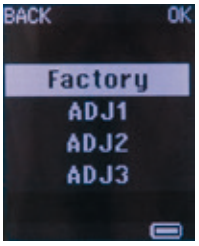


In 2-point adjustment, 10% and 100% of maximum volume are used to match actual and target results



In 3-point adjustment, 10%, 50% and 100% of maximum volume are used to match actual and target results





10. Then, the pipette asks if you want to save the adjustment data. Confirm the saving of the data by pressing the operating button or the right Softkey for YES. If you do not wish to save the data, press the left Softkey for NO.
11. Note that you may exit the editing mode, without saving any changes, at any time, by pressing the left Softkey for BACK.

To activate the saved adjustment settings:
1. Select MENU by pressing the left Softkey.
2. Use the adjustment wheel to select Setup. Confirm the selection by pressing the operating button or the Softkey for OK.
3. Adjustment function is highlighted. Confirm the selection by pressing the operating button or the Softkey for OK.
4. Use the adjustment wheel to select ADJ1, ADJ2 or ADJ3 memory location. Confirm the selection by pressing the operating button or the Softkey for OK.
5. The pipette asks, if you wish to set the custom adjustment values. Confirm the setting by pressing the operating button or the right Softkey for OK. If you do not wish to set the data, press the left Softkey for NO.
6. If you confirmed the setting, ADJ1, ADJ2 or ADJ3 is now displayed on the lower left corner per your selection and the pipette simultaneously returns to the Setup menu. Press the left Softkey for BACK two times to get back to the main display.

3.4.2 Sound

The sounds for turning the adjustement wheel and for messages are set on by default. The user may choose to set them off or on.

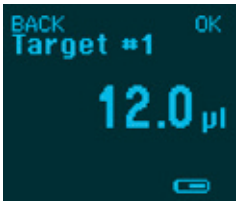
To change the sound settings:
1. Select MENU by pressing the left Softkey.
2. Use the adjustment wheel to select Setup. Confirm the selection by pressing the operating button or the Softkey for OK.
3. Use the adjustment wheel again to select Sound. Confirm the selection by pressing the operating button or the Softkey for OK.
4. On the display the Adj. Wheel setting is highlighted in On or Off mode.
   a. If you wish to change the setting, turn the adjustment wheel. Then press the operating button or the right Softkey for OK to confirm the change

   OR

   b. Leave the parameter as it is by pressing the operating button or the right Softkey for OK to accept the setting.
5. The Messages parameter becomes highlighted in On or Off mode. Repeat steps 4.a or 4.b.
6. At any time, you may press the left Softkey for BACK to exit the editing mode without saving any changes.
7. Once you are back in the Setup menu, press the left Softkey for BACK two times to return to the main display.

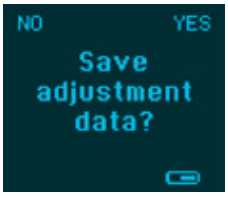
3.4.3 Backlight

The backlight colour of the display can be changed. By default it is white-gray, while the pipette is in use, but while it is charging, the colour changes to match the volume colour-code. (The operating button and matching tips are similarly colour-coded, to aid tip selection.) If the backlight colour is changed by the user, the selected colour is applied both while the pipette is in use, and while it is charging.

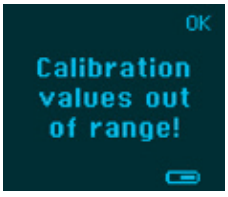


Choose the desired target volume

Insert the volume actually measured



To save the adjustment, press the Softkey for YES or the operating button.



The difference between the target volume and the actual value exceeds the limits that can be calibrated.

The pipette is set to use the adjustment values saved to memory place ADJ1.

To change the colour of the display backlight:

1. Select MENU by pressing the left Softkey.
2. Use the adjustment wheel to select Setup. Confirm the selection by pressing the operating button or the Softkey for OK.
3. Use the adjustment wheel again to select Backlight. Confirm the selection by pressing the operating button or the Softkey for OK.
4. All colour options are listed. Choose the desired colour by using the adjustment wheel.
   a. Confirm the selection by pressing the operating button or the Softkey for OK,

   OR

   b. Press the left Softkey for BACK to exit the list without saving any changes.
5. Once you are back in the Setup menu, press the left Softkey for BACK two times to return to the main display.

3.4.4 User ID

The pipette can be named to help identify it. The user can, for example, add her/his name to the pipette, so that laboratory technicians can know, which pipette belongs to whom. When the pipette is turned on, the name is displayed on the screen.

To change the ID/name:

1. Select MENU by pressing the left Softkey.
2. Use the adjustment wheel to select Setup. Confirm the selection by pressing the operating button or the Softkey for OK.
3. Use the adjustment wheel again to select User ID. Confirm the selection by pressing the operating button or the Softkey for OK.
4. The previously used name is displayed on the screen.
5. To edit the name press the operating button, when the first chracter becomes highlighted and can be edited.
6. Capital letters are used as default. Use the middle Softkey to change the character type: ABC indicates capital letters, abc lower case letters, 123 numbers and #@! other characters.
7. Turn the adjustment wheel to select the character you desire and confirm the selection by pressing the right Softkey for OK or the operating button.
8. The next character to be edited is highlighted. Repeat steps 6 and 7 to edit all characters.
   a. When you have edited and accepted all characters, press the middle Softkey for SAVE,

   OR

   b. If you do not want to save the edited ID, but to keep the former one, then press the left Sofkey for BACK.
9. Once you are back in the Setup menu, press the left Softkey for BACK two more times to return to the main display.

To delete the characters:

1. Follow steps 1 to 4 above to see the current ID in use.
2. Turn the adjustment wheel to underline the character to be deleted, and press the right Softkey for CLEAR.
3. Repeat step 2, for every character to be deleted.
4. When you have deleted all the characters, press the middle Softkey for SAVE, and you will be returned to the Setup menu, or continue editing the ID by pressing operation button. Please note that all characters cannot be deleted.
5. If you do not want to save the edited ID, but to keep the former one, then press the left Sofkey for BACK.
6. Once you are back in the Setup menu, press the left Softkey for BACK two more times to return to the main display.

3.4.5 GLP Info

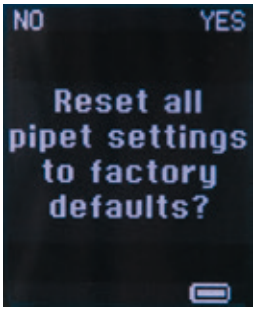
GLP (Good Laboratory Practice) Info feature allows the storage of dates to indicate when the pipette was last serviced/calibrated and when the next service/calibration is due.

To change the dates:

1. Select MENU by pressing the left Softkey.
2. Use the adjustment wheel to select Setup. Confirm the selection by pressing the operating button or the Softkey for OK.
3. Use the adjustment wheel again to select GLP Info. Confirm the selection by pressing the operating button or the Softkey for OK.
4. The previously used dates are displayed on the screen. Turn the adjustment wheel to edit the date/month/year. Confirm the selection by pressing the operating button or the Softkey for OK, and the next parameter becomes editable.
5. Repeat the previous step for all parameters you want to change and confirm the last parameter with OK, and simultaneously exit the GLP Info screen back to the Setup menu.
6. You may exit at any time by pressing the left Softkey for BACK without saving any changes.
7. Once you are back in the Setup menu, press the left Softkey for BACK two more times to return to the main display.

3.4.6 Reset

The Reset function allows the user to return all factory settings and overwrite all personal settings, including the stored programs.



To reset pipette settings:

1. Select MENU by pressing the left Softkey.
2. Use the adjustment wheel to select Setup. Confirm the selection by pressing the operating button or the Softkey for OK.
3. Use the adjustment wheel again to select Reset. Confirm the selection by pressing the operating button or the Softkey for OK.
4. The pipette asks, if the user wants to reset all settings.
   a. To approve resetting, press the right Softkey for YES or the operating button. Follow the instructions on the screen and press the tip ejection button. The settings are now reset to factory defaults.

   OR

   b. To cancel the resetting, press the left Softkey for NO. The settings are not reset and you are simultaneously returned to the Setup menu.
5. Once you are back in the Setup menu, press the left Softkey for BACK two times to return to the main display.

3.4.7 Information

The Information function displays the current sofware version of the pipette and the level of charge of the battery. This information is not editable.

To view the information:

1. Select MENU by pressing the left Softkey.
2. Use the adjustment wheel to select Setup. Confirm the selection by pressing the operating button or the Softkey for OK.
3. Use the adjustment wheel again to select Information. Confirm the selection by pressing the operating button or the Softkey for OK.
4. The display shows the current software version and the level of charge of the battery.
5. To exit the screen, press the right Softkey for OK or the operating button, when you return back to the Setup menu.
6. Once you are back in the Setup menu, press the left Softkey for BACK two times to return to the main display.

3.4.8 Languages

The Languages setting provides the option to change the user interface language. The available languages are English, French, German, Chinese and Russian (available from the software version 1.07 onwards).

To change the language:

1. Select MENU by pressing the left Softkey.
2. Use the adjustment wheel to select Setup. Confirm the selection by pressing the operating button or the Softkey for OK.
3. Use the adjustment wheel again to select Languages. Confirm the selection by pressing the operating button or the Softkey for OK.
4. The list of languages are shown on the display.
   a. Use the adjustment wheel to select the desired language and press the operating button or the right Softkey for OK to activate the language and to return to the Setup menu

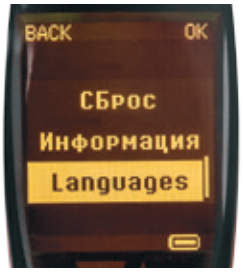
   OR

   b. Press the left Softkey for BACK, if you do not wish to change the language, but to return to the Setup menu.
5. Once you are back in the Setup menu, press the left Softkey for BACK two times to return to the main display.

French

German

Chinese



Russian

3.4.9 Password

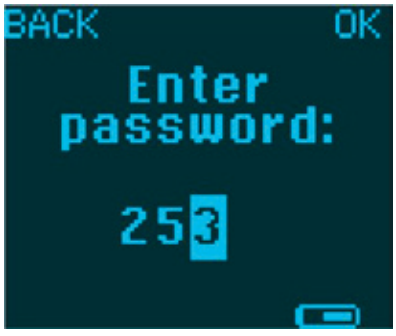
The saved programs can optionally be protected with a password from unauthorized editing in Picus® NxT pipettes. With the Password setting, the password can be activated, deactivated and changed.

To activate or deactivate the Password feature:

1. Select MENU by pressing the left Softkey.
2. Use the adjustment wheel to select Setup. Confirm the selection by pressing the operating button or the Softkey for OK.
3. Use the adjustment wheel again to select Password. Confirm the selection by pressing the operating button or the Softkey for OK.
4. The prevailing status of the Password feature is highlighted on the display: as either On or Off.
5. Change the status of the Password On/Off by pressing the operating button or the Softkey for OK.
6. The display asks you to enter the current password.
   a. Enter the password one number at the time by using the adjustment wheel and confirm the number by pressing the right Softkey for OK or the operating button. Repeat this until you have inserted all numbers.

   OR

   b. Press the left Softkey for BACK at any time to exit the screen without changing the status.
7. Once the last number is confirmed, the status of the password is changed On/Off and is displayed on the screen.
8. Exit the Password display by pressing the left Softkey for BACK.
9. Once you are back in the Setup menu, press the left Softkey for BACK two more times to return to the main display.



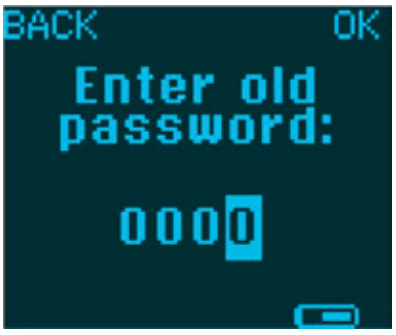
To change the password:

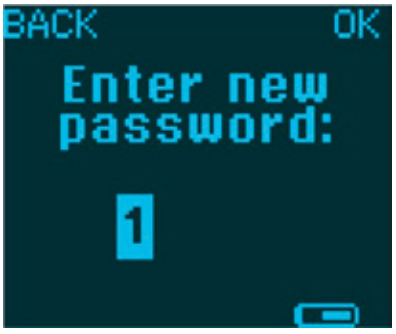
1. Repeat steps 1 - 3 above to access the Password display.
2. Turn the adjustment wheel to highlight “Set new password”.
3. Press the right Sofkey for OK or the operating button to edit the password.
4. The display asks you to enter the current password.
   a. Enter the password one number at the time by using the adjustment wheel and confirm the number by pressing the right Softkey for OK or the operating button. Repeat this until you have inserted all 4 numbers.

   OR

   b. Press the left Softkey for BACK at any time to exit the screen without saving any changes.

5. The display asks you to enter the new password.
   a. Enter the password one number at the time by using the adjustment wheel and by accepting the number by pressing the right Softkey for OK or the operating button. Repeat this until you have inserted all 4 numbers.
   OR
   b. Press the left Softkey for BACK at any time to exit the screen without saving any changes.
6. When you have accepted the last number, the password has been changed and "New password set!" text is displayed on the screen after which you are returned to the Password display.
7. Exit the Password display by pressing the left Softkey for BACK.
8. Once you are back in the Setup menu, press the left Softkey for BACK two times to return to the main display.





3.5. RFID

Picus® NxT is RFID enabled to support asset management. To recall the information stored on the RFID chip, the reader and the software for RFID type HTS2048 are required.

On delivery, the RFID chip in the Picus® NxT contains the following information:
- Product code
- Serial number
- Calibration certificate number
- Calibration date

4. Care and Maintenance

Any precision instrument, such as a pipette, comprises of a great variety of mechanical and electronic parts that are subject to wear and tear. By taking care of the pipette and carrying out regular maintenance and calibration the functionality and performance of the pipette can be ensured.

To avoid contamination of the pipette and the sample and to extend the pipette's lifetime, Sartorius Safe-Cone Filters (available for pipettes >10 µl) or Sartorius SafetySpace Filter Tips should be used.

Sartorius provides service, maintenance and calibration services through its global network of service centres. Please contact your nearest service centre for assistance.

NOTE! Please note that the warranty will be voided in the event that the pipette is disassembled or assembled by an unauthorised person.

4.1 Cleaning and Maintenance

Sartorius electronic pipettes can be cleaned and decontaminated by using disinfectant or decontaminant liquids such as 70% ethanol, 60% isopropanol, mild detergent or similar.

Always check the chemical compatibility between the materials of the pipette and the disinfectant or decontaminant liquid.

- Turn off the pipette prior to cleaning.
- It is recommended to always use gloves when cleaning the pipette.
- Change the Safe-Cone Filter regularly with the tweezers provided with the pipette.
- Cleaning is always recommended after possible contamination or dispensing corrosive or other aggressive chemicals.
- Never let liquids enter the inner parts of the pipette.

– Never use the pipette without tip attached to the tip-cone.
– Tools needed: lint-free cloth, cleaning solution, e.g. 70% ethanol.

4.1.1 Single-channel pipettes

Cleaning the outer surface of all models
Clean any visible dirt with mild detergent or similar and a lint-free cloth. Wipe dry.

Models 10 µl and 120 µl; cleaning and maintaining the lower parts:
– Turn off the pipette
– Remove the Safe-Cone Filter, if attached
– Unscrew the tip ejector collar counter-clockwise and remove it
– Unscrew the tip-cone locking ring counter-clockwise and carefully remove it
– Unscrew the exposed piston counter-clockwise
– Clean the tip ejector collar, tip-cone locking ring, tip-cone and piston with cleaning solution or similar and a lint-free cloth
– Rinse with distilled water if needed and let the parts dry
– Install the piston by screwing it clockwise, do not over tighten
– Put a thin layer of autoclavable grease (cat. no. 731141) on the piston
– Carefully replace the tip-cone and attach it by turning the tip-cone locking ring clockwise
– Insert a Safe-Cone Filter with tweezers (Safe-Cone Filter in models >10 µl)
– Turn the pipette on

Models 300 µl and 1000 µl; cleaning and maintaining the lower parts:
– Turn off the pipette
– Remove the Safe-Cone Filter, if attached
– Unscrew the tip ejector collar counter-clockwise and remove it
– Unscrew the tip-cone locking ring counter-clockwise and carefully remove it
– Unscrew the exposed piston counter-clockwise
– Clean the tip ejector collar, tip-cone locking ring, tip-cone and piston with cleaning solution or similar and a lint-free cloth
– Rinse with distilled water if needed and let the parts dry
– Install the piston by screwing it clockwise, do not over tighten
– Put a thin layer of autoclavable grease (cat. no. 731141) around the seal
– Carefully place the tip-cone on the piston attach it by screwing the tip-cone locking ring clockwise
– Attach the tip ejector collar by screwing it clockwise
– Insert the Safe-Cone Filter with tweezers
– Turn the pipette on

Model 5 ml; cleaning and maintaining the lower parts:
– Turn off the pipette
– Remove the Safe-Cone Filter, if attached
– Unscrew the tip ejector collar counter-clockwise and remove it
– Hold the tip-cone holder between your fingers, unscrew the tip-cone by turning it counter-clockwise, and then remove it
– Unscrew the exposed piston counter-clockwise
– Clean the tip ejector collar, tip-cone locking ring, tip-cone and piston with mild detergent or similar and a lint-free cloth
– Rinse with distilled water if needed and let the parts dry
– Install the piston by screwing it clockwise, do not over tighten
– Put a thin layer of autoclavable grease (cat. no. 731141) on the seal and the interior of the tip-cone, avoid excess grease
– Carefully place the tip-cone onto the piston, hold the tip-cone holder and screw it in by turning it clockwise
– Attach the tip ejector collar by screwing it clockwise
– Insert the Safe-Cone Filter with tweezers
– Turn on the pipette

Model 10 ml; cleaning and maintaining the lower parts:
- Turn off the pipette
- Remove the Safe-Cone Filter, if attached
- Unscrew the tip ejector collar counter-clockwise and remove it
- Hold the tip-cone between your fingers, open the bayonet lock by turning the bayonet locking-ring clockwise until it stops, and remove the tip-cone.
- Unscrew the exposed piston counter-clockwise
- Clean the tip ejector collar, tip-cone locking ring, tip-cone and piston with cleaning solution or similar and lint-free cloth
- Rinse with distilled water if needed and let the parts dry
- Install the piston by screwing it clockwise, do not overtighten
- Put a thin layer of autoclavable grease (cat. no. 731141) on the seal and the interior of the tip-cone, avoid excess grease
- Carefully place the tip-cone on the piston, hold the tip-cone and turn the bayonet locking-ring counterclockwise until it stops, to lock the tip-cone
- Make sure that the tip-cone is properly tightened, do not over-tighten.
- Attach the tip ejector collar by screwing it clockwise
- Insert the Safe-Cone Filter with tweezers
- Turn the pipette on

NOTE! After cleaning or maintenance, it is necessary to check the performance of the pipette.

4.1.2 Multichannel Pipettes

Cleaning the outer surface of all models:
Clean any visible dirt with cleaning solution or similar and a lint-free cloth. Wipe dry.

Cleaning and maintaining the lower parts of all models
Opening the lower part of a multichannel pipette should only be done by an authorised Sartorius service provider. Please contact your nearest Sartorius service provider or distributor.

4.2 Sterilizing

The lower parts of Sartorius electronic pipettes can be sterilized by autoclaving, UV or by using disinfectant or decontaminant liquids such as 70% ethanol, 60% isopropanol, mild detergent or similar. Always make sure of the chemical compatibility between the materials of the pipette and the disinfectant or decontaminant liquid.
Always follow the autoclaving instructions below.

4.2.1 Autoclaving

Lower parts of Sartorius electronic pipettes are autoclavable excluding the lower parts of 1200 µl multichannel pipettes.
Please see the autoclaving symbol printed on the lower part of the multichannel pipettes to make sure the lower part is autoclavable.

Autoclaving instructions
1. Remove the Safe-Cone Filter if attached.
2. Unscrew the lower part by turning the connecting collar and the dispensing head counter-clockwise until it comes off.
3. Sterilize the part at 121°C, 1 bar overpressure for 20 minutes.
4. Let the parts cool and dry before reassembling.

NOTE! The lower parts of multichannel pipettes can be autoclaved as one unit or separately as individual parts.

4.2.2 UV Sterilization

Sartorius electronic pipettes are made of UV-resistant materials. The UV-resistance of the products has been tested in continuous UV-light under the following test conditions, which we also recommend to be applied in UV-sterilization in labs:

- Wave length: Shortwave ultraviolet (UVC)
- Power: 2x20W (twin tubes)
- Distance from tube surface to table/product surface: 620 mm
- Tested UV-dosage: 33000 mJ/cm^2

4.2.3 Using Disinfectant Liquid

Sartorius electronic pipettes can be cleaned and decontaminated using disinfectant or decontaminant liquids such as 70% ethanol, 60% isopropanol, mild detergent or similar. Always make sure of the chemical compatibility of the materials of the pipette and the disinfectant or decontaminant liquid.

Single-channel pipettes
Wipe the outer surface of the single-channel pipettes with a decontaminant fluid, 70% ethanol, 60% isopropanol, mild detergent or similar. For complete decontamination of the lower parts (tip ejector collar, tip-cone, spring and piston), they can be placed into a dish containing disinfectant or decontaminant liquid. Leave the parts to soak for 30 minutes. Rinse the parts with distilled water and leave to dry before reassembling.

Multichannel pipettes
Wipe the outer surface of the multichannel pipettes with a decontaminant fluid, 70% ethanol, 60% isopropanol, mild detergent or similar.
The lower part of a multichannel pipette should be opened only by an authorised Sartorius service provider.

4.3 Performance Testing

It is recommended that the performance of the Sartorius pipettes is checked regularly (e.g. every 3 months) and always after in-house maintenance. A regular testing routine should be established by users, for their pipettes, taking into consideration the accuracy requirements of the application, frequency of use, number of operators using the pipette, nature of the liquid to be dispensed and the acceptable maximum permissible errors established by the user (ISO 8655-1).

Performance tests should take place in a draught-free room at 15–30°C, kept constant within ±0.5°C and relative humidity above 50%. The pipette, tips and the test water should have stood in the test room for long enough (at least 2 hours) to reach equilibrium with the room conditions. Use distilled or de-ionised water (ISO 3696, grade 3). Use an analytical balance with a readability according to ISO 8655-6.

Weighing
1. Adjust the desired test volume VS
2. Carefully fit the tip onto the tip-cone.
3. Fill the tip with test water and expel to waste five times to reach humidity equilibrium in the dead air volume
4. Replace the tip. Pre-wet the tip by filling it once with the test water and expell to waste.
5. Aspirate the test water, immersing the tip only 2-3 mm below the surface of the water. Keep the pipette vertical.
6. Withdraw the pipette vertically and touch the tip against the side wall of the test water container
7. Pipette the water into the weighting vessel, touching the tip against the inside wall of the vessel just above the liquid surface at the angle of 30° to 45°. Withdraw the pipette by drawing the tip 8-10 mm along the inner

wall of the weighing vessel.
8. Read the weight in mgs (mi).
9. Repeat the test cycle until 10 measurements have been recorded.
10. Convert the recorded masses (mi) to volumes (vi) by multiplying the mass with the correction factor Z (Z-values in the table below): Vi = mi Z

Z-values (µl/mg)

Temp. (°C)	Air Pressure (kPa)			
	95	100	101.3	105
20.0	1.0028	1.0028	1.0029	1.0029
20.5	1.0029	1.0029	1.0030	1.0030
21.0	1.0030	1.0031	1.0031	1.0031
21.5	1.0031	1.0032	1.0032	1.0032
22.0	1.0032	1.0033	1.0033	1.0033
22.5	1.0033	1.0034	1.0034	1.0034
23.0	1.0034	1.0035	1.0035	1.0036
23.5	1.0036	1.0036	1.0036	1.0037

12. Calculate the mean volume (V) delivered: V = (Vi)/10
13. For conformity evaluation calculate the systematic error eS of the measurement:
    in µl: eS = V – VS VS=selected test volume
    or in %: eS = 100 (V – VS)/VS
14. For conformity evaluation calculate the random error of the measurement as standard deviation:

$$s = \sqrt{\frac{\Sigma(V_i - \overline{V})^2}{n-1}}$$ n = number of measurement (10)

    or as coefficient of variation CV=100s/V
15. Compare the systematic error (inaccuracy) and random error (imprecision) to the performance specification values of your own laboratory.

NOTE! Systematic error is the difference between the dispenced volume and the selected test volume. Random error is the scatter of the dispensed volumes around the mean of the dispensed volume (ISO 8655-1)

NOTE! Sartorius specifications are achieved in strictly controlled conditions (ISO 8655-1). Users should establish acceptable maximum permissible errors based on the field of use and the accuracy requirements placed on the pipette (ISO 8655-1).

4.4 Replacing the Battery

It is recommended that the Picus®/Picus® NxT battery is replaced only by an authorised Sartorius service provider. Please contact your nearest Sartorius representative.

4.5 Replacement Parts

To replace broken or worn parts Sartorius offers a full range of spare parts. Always contact the manufacturer or manufacturer's authorised representative for original spare parts for your Sartorius pipette.

4.6 Storage

When not in use, it is recommended that the Picus®/Picus® NxT electronic pipettes are stored on the charging stand. During long storage periods (several months) it is recommended that the charging stand is disconnected from the mains power outlet, and the pipette is turned off by pressing the power button on the top of the pipette.

5. Warranty

Sartorius products are meant to be used as described in this user manual. Picus®/Picus® NxT electronic pipettes are covered by warranty for two years against defects in workmanship and materials. The battery is not covered by our warranty.

ANY WARRANTY WILL, HOWEVER, BE DEEMED AS VOID IF THE FAULT IS FOUND TO HAVE BEEN CAUSED BY MISTREATMENT, MISUSE, UNAUTHORIZED MAINTENANCE OR SERVICE OR NEGLIGENCE OF REGULAR MAINTENANCE AND SERVICE, ACCIDENTAL DAMAGE, INCORRECT STORAGE OR USE OF THE PRODUCTS FOR OPERATIONS OUTSIDE THEIR SPECIFIED LIMITATIONS, OUTSIDE THEIR SPECIFICATIONS, CONTRARY TO THE INSTRUCTIONS GIVEN IN THIS MANUAL OR WITH TIPS OTHER THAN THE MANUFACTURER'S ORIGINAL ONES.

Each Picus®/Picus® NxT electronic pipette is tested before shipping by the manufacturer. The Sartorius Quality Assurance Procedure guarantees that the Picus®/Picus® NxT electronic pipette you have purchased is ready for use. Each Picus®/Picus® NxT electronic pipette is CE marked, fulfilling the requirements of the EN 55014, 1993/EN 55104, 1995/ ISO 13485:2003 and Directive (98/79 EC).

6. Hazardous Substances (RoHS II)

The product is in compliance with the European Union Directive, RoHS II (2011/65/EC) on the restriction of use of hazardous substances. The information is based on our supplier provided information. Confirmation of compliance status by our suppliers is either the product does not contain any of the restricted substance(s), or the used concentrations are below the given threshold levels.

7. Disposal (WEEE)

In compliance with European Directive, WEEE (2002/96EC) on waste and reduction of hazardous substances in electrical and electronic equipments, this device must not be disposed of as unsorted municipal waste. Instead this device must be collected separately in accordance to the local recycling regulations. Batteries should be disposed of in accordance with local legal regulations.

8. Troubleshooting

8.1 Hardware Reset

If the pipette is unresponsive it is possible to force turning off and resetting the hardware. This function will not affect the saved settings (e.g adjustment, memory). To turn off an unresponsive pipette press simultaneously ON/OFF button and the right Softkey for a few seconds. Pipette will turn off and can then be turned on again by pressing ON/OFF button.

NOTE! Make sure the pipette is not placed on the charging unit or connected to the USB cable while being reset.

8.2 Troubleshooting Guide

Problem	Possible Cause	Solution
Leakage	– Incompatible tip	– Use original Sartorius tips
	– Tip is loose	– Attach the tip firmly
	– Pipette is dirty	– Clean the pipette
	– Pipette is broken	– Replace the broken parts or send the pipette for service
Inaccuracy	– Pipette is dirty	– Clean the pipette
	– Pipette is broken	– Replace the broken parts or send the pipette for service
Pipette does not turn on	– Pipette is in OFF mode	– Turn the pipette on by pressing ON/OFF button
	– Empty battery	– Connect the pipette to the charger
Piston is jammed	– Inner lower parts are loose	– Open the lower part and tighten the parts
	– Pipette is dirty	– Clean the pipette
	– Pipette is broken	– Replace the broken parts or send the pipette for service
Pipette does not aspirate liquid properly	– Safe-Cone Filter is dirty	– Replace the Safe-Cone Filter
	– Pipette is dirty	– Clean the pipette
	– Pipette is broken	– Replace the broken parts or send the pipette for service

9. Technical Data

Rechargeable battery	
Type	Li-Polymer battery with protection circuit
Capacity	3,7 V/350 mAh
Charging time	Approx. 1 hour
Chargers, charging stands	
USB-charger for Picus®/Picus® NxT pipette	For Indoor and Office Equipment Use Only
Input voltage	100 – 240V ~ 50/60Hz, 180mA
Output voltage	5V, 1A LPS
Output connector type	Micro-USB
AC-charger for charging stand for 1 pipette	
Input voltage	According to local requirements
Output voltage	7.5 VDC/300 mA
AC-charger for charging stand for 4 pipettes	
Input voltage	According to local requirements
Output voltage	9 VDC/1200 mA
Picus®/Picus® NxT electronic pipette	
Operating temperature	+15°C to +40°C
Air humidity	Max. 80%
Weight	
Single-channel 10-300 µl	100 g
Single-channel 50–1000 µl	110 g
8-channel 10–300 µl	160 g
Length	
Single-channel 10-300 µl	21,0 cm
Single-channel 50–1000 µl	21,6 cm
8-channel 10–300 µl	21,6 cm
Pipetting force for single- and multichannel models	1,3 N
Tip ejecting force for single- and multichannel models	3,1 N

9.1 Performance Specifications

1-channel	Increment (µl)	Test volume (µl)	Systematic Error +/- %	+/- µl	Random Error +/- %	+/- µl
0,2-10 µl	0,01	10	0,90	0,09	0,40	0,04
		5	1,00	0,05	0,70	0,035
		1	2,50	0,025	1,50	0,005
5–120 µl	0,10	120	0,40	0,48	0,15	0,18
		60	0,60	0,36	0,20	0,12
		12	2,00	0,24	1,00	0,12
10-300 µl	0,20	300	0,40	1,2	0,15	0,45
		150	0,60	0,9	0,20	0,3
		30	1,50	0,45	0,80	0,24
50-1000 µl	1,00	1000	0,40	4,00	0,15	1,5
		500	0,60	3,00	0,20	1,0
		100	1,50	1,5	0,50	0,5
0,1–5 ml	5,00	5000	0,50	25,00	0,15	7,5
		2500	0,80	20,00	0,20	5,00
		500	1,00	5,00	0,40	2,00
0,5–10 ml	10,00	10000	0,60	60,00	0,20	20,00
		5000	1,20	60,00	0,30	15,00
		1000	3,00	30,00	0,60	6,00
8–channel						
0,2–10 µl	0,01	10	0,90	0,09	0,50	0,05
		5	1,50	0,075	0,80	0,04
		1	4,00	0,04	3,00	0,03
5–120 µl	0,10	120	0,50	0,6	0,20	0,24
		60	0,70	0,42	0,30	0,18
		12	2,00	0,24	1,50	0,18
10-300 µl	0,20	300	0,50	1,5	0,20	0,6
		150	0,70	1,05	0,30	0,45
		30	2,00	0,6	1,00	0,3
50–1200 µl	1,00	1200	0,50	6,00	0,20	2,4
		600	1,00	6,00	0,30	1,8
		120	2,50	3,00	1,00	1,2
12–channel						
0,2–10 µl	0,01	10	0,90	0,09	0,50	0,05
		5	1,50	0,075	0,80	0,04
		1	4,00	0,04	3,00	0,03
5–120 µl	0,10	120	0,50	0,6	0,20	0,24
		60	0,70	0,42	0,30	0,18
		12	2,00	0,24	1,50	0,18
10-300 µl	0,20	300	0,50	1,5	0,20	0,6
		150	0,70	1,05	0,30	0,45
		30	2,00	0,6	1,00	0,3
50–1200 µl	1,00	1200	0,50	6,00	0,20	2,4
		600	1,00	6,00	0,30	1,8
		120	2,50	3,00	1,00	1,2

9.2 Speed Table

Speed is measured in Pipetting mode with the maximum volume.
Speed can be adjusted in all main pipetting modes individually for aspiration and dispensing.
Speed range is from 1 (slow) to 9 (fast).

Single-channel pipettes (speed in seconds)

Speed	10 µl	120 µl	300 µl	1000 µl	5 ml	10 ml
1	2,5	6,0	7,7	10,1	10,2	10,2
2	1,8	4,2	5,3	7,4	7,4	7,4
3	1,3	2,9	3,7	5,4	5,4	5,4
4	1,0	2,1	2,7	3,8	3,8	3,8
5	0,8	1,5	1,9	2,8	2,7	2,9
6	0,6	1,1	1,4	1,9	1,8	2,2
7	0,5	0,9	1,1	1,2	1,1	1,7
8	0,4	0,7	0,9	0,8	0,8	1,3
9	0,3	0,6	0,8	0,6	0,6	0,9

Multichannel pipettes (speed in seconds)

Speed	10 µl	120 µl	300 µl	1200 µl
1	2,5	6,1	5,4	6,1
2	1,8	4,4	3,9	4,4
3	1,3	3,3	2,9	3,3
4	1,0	2,4	2,1	2,5
5	0,8	1,8	1,6	1,9
6	0,6	1,4	1,2	1,4
7	0,5	1,1	1,0	11
8	0,4	0,9	0,8	0,9
9	0,3	0,7	0,7	0,7

10. Ordering Information

Picus® NxT and Picus®

Picus® NxT Order Code	Picus® Order Code	Channels	Volume Range (µl)	Safe-Cone Filters Standard	Plus	Optifit Tips (µl)	SafetySpace Filter Tips (µl)
LH-745021	735021	1	0,2-10	-	-	10	10
LH-745041	735041	1	5-120	721008	721018	200 350	120
LH-745061	735061	1	10-300	721007	721017	350	300
LH-745081	735081	1	50-1000	721006	721016	1000	1000
LH-745101	735101	1	100-5000	721005	721015	5000	–
LH-745111	735111	1	500-10000	721005	721015	10000	–
LH-745321	735321	8	0,2-10	-	-	10	10
LH-745341	735341	8	5-120	721008	721018	200 350	120
LH-745361	735361	8	10-300	721007	721017	350	300
LH-745391	735391	8	50-1200	721006	721016	1200	1200
LH-745421	735421	12	0,2-10	-	-	10	10
LH-745441	735441	12	5-120	721008	721018	200 350	120
LH-745461	735461	12	10-300	721007	721017	350	300
LH-745491	735491	12	50-1200	721006	721016	1200	1200

* Low Retention Tips are available in volumes up to 1200 µl
All pipettes include universal charger (EU, UK, US | JPN, AUS and CHN plugs)

11. Declaration of Conformity

CE

EC Certificate of Conformity

I, the undersigned, hereby declare that the Product(s)

Picus® & Picus® NxT Electronic Pipettes, Charging Stand and Charging Carousel

conforms to the protection requirements of Council Directive 2004/108/EC, relating to Electromagnetic Compatibility, EN61326 and Safety IEC 61010-1 ed 3.0, by the application of:
Technical Construction File No. 01/12 dated 26/04/2012 and Competent Body Technical Report/Certificate No. 198349 dated 25/04/2012 and Report No.198349E, dated 31/05/2012 issued by:
Nemko Oy , Perkkaantie 11, FIN-02601 Espoo, Finland, Tel: +358-424 545 41

This declaration is supported by EC quality system approval certificates:
ISO 9001 / ISO 13485 Certificate No.108129-2011-AQ-FIN-FINAS issued by DNV on 20. December 2011
ISO 17025 Certificate No. K041 issued by FINAS on 16. December 2011
ISO 14001 Certificate No.108133-2011-AE-HEL-FINAS issued by DNV on 20 December 2011

Signed: _____ Date: 3rd June 2014

Full Name: Jussi Heiniö

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